SITE: Florida Phosphates
BREAK: 17.1
OTHER: V.1

EPA OVERVIEW
PHOSPHATE MINING MEETING
AUGUST 29, 2001

Mission Statement: Ensure that chemical levels that remain in soil, water, and other media at reclaimed phosphate mines and former processing and chemical plants are protective of human health, welfare and the environment.

EPA ROLE AND RESPONSIBILITIES

- Protection of Human Health, Welfare, and the Environment
- Response to Release or Threat of Release of Hazardous Substances, Pollutants or Contaminants
- Evaluate and Cleanup Sites

CERCLA PROCESS

- Emergency/Remedial Response
- Evaluation Criteria: HRS and NPL
- CERCLIS

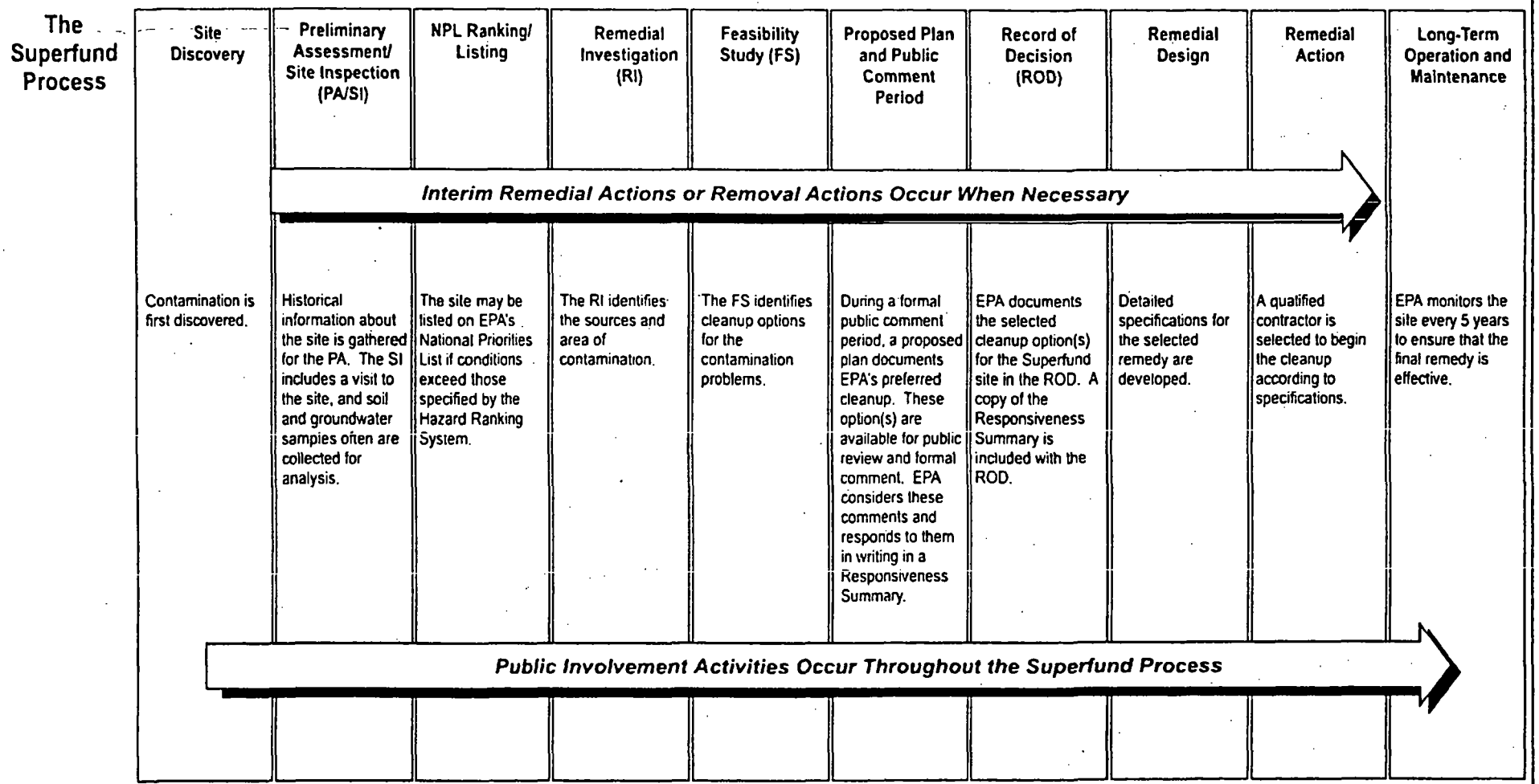
PROBLEM ASSESSMENT

- Potential Risks
- Logistics
- Feasibility

NEXT STEPS/ACTION ITEMS

What Is Superfund?

Superfund is the commonly used name for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a federal law enacted in 1980 and amended in 1986. CERCLA enables EPA to respond to hazardous waste sites that threaten public health and the environment.



BOMR Summary of EPA List of Phosphate Mines and Plants

(Refer to Rate of Reclamation Report for status of facility & reclamation)

29-May-01

Site ID	Site Name	EPA ID	Address	Comments
0400471	Sydney Mine Sludge Ponds 1	FLD000648055	Hwy 60/.5 mi E of Dover Rd, Brandon 33594	Non Mandatory area, some parcels reclaimed, several unreclaimed, clay settling areas, "sludge" unknown
0400477	IMC Phosphates Clear Springs Mine	FLD000770420	Clear Springs Rd, Bartow 33830	Closed mine and beneficiation plant, clay settling areas & sandtailings, Proposed housing & industrial development Currently owned by Clear Springs Land Development Company
0400478	IMC Phosphates Kingsford Mine	FLD000770453	Doc Durrance Rd, Bradley 33835	Operating mine and beneficiation plant, CSAs & sandtailings, surrounds IMC New Wales Chem. Plant & Phosphogypsum stack
0400487	Brewster Lonesome Mine	FLD000826834	E off SR 39 & N off SR 674, Ft Lonesome 33835	Lonesome beneficiation plant closed, Portion north of South Prong Alafia River and east of SR 39 was donated to state as Alafia River State Recreation Area - mostly reclaimed - some active mining & reclamation remain, CSAs & sandtailings. Remaining portion consolidated into the IMC Four Corners / Lonesome Mine complex.
0400488	Brewster Haynesworth Mine	FLD000826842	SR 37, Bradley 33835	Haynesworth beneficiation plant closed, CSAs & sandtailings, consolidated into the IMC Kingsford complex
0400491	Cargill (Gardinier) Ft Meade Mine	FLD000827428	Hutchinson Rd near Peeples Rd, Ft Meade 33841	Operating mine & beneficiation plant / Temporarily shut-down, CSAs & sandtailings.
0400509	Cargill (WR Grace) Bonnie Lake Mine	FLD003952033	Hwy 60, Bartow 33830	Closed mine and beneficiation plant, CSAs & sandtailings, Operating chemical plant & phosphogypsum stacks
0400543	Estech Silver City Mine	FLD004106829	SR 555, Bartow 33830	Closed mine-beneficiation plant-chemical plant, phosphogypsum stack closed, CSAs & sandtailings, portions of mine now owned and within the Florida Power Corp. Hines Energy Facility
0400584	Mobil Ft Meade Mine	FLD021714639	US Hwy 17, Ft Meade 33841	Closed mine and beneficiation plant, CSAs & sandtailings, property sold to developer and resold to numerous third parties in tracts of varying size (ranchettes).
0400749	BANK — Agrifos (T/A Minerals) Mulberry Mine	FLD077586634	SR 37 S, Mulberry 33860	Closed mine and beneficiation plant, NonMandatory / partially reclaimed, unreclaimed portions incorporated into Agrifos Nichols Mine for remining, Agrifos filed for bankruptcy prior to completing remining.
0400824	Estech Watson Mine	FLD980385496	W of Hwy 17, Ft Meade 33841	Closed mine and beneficiation plant, CSAs / Flocculated clay-in-pits & sandtailings, majority of reclaimed land in agricultural production (mostly citrus and pasture).
0400867	Florida Solite Russell Mine 2	FLD980556435	SR 209C, Russell 32208	Non-phosphate mine
0400909	IMC Phosphates (Agrico) Palmetto Mine	FLD980727077	S of SR 630, Bradley 33835	Majority of tract incorporated into the Cargill Hooker's Prairie Mine, NonMandatory being remined and/or used as CSAs
0400910	IMC Phosphates (Agrico) Payne Creek Mine	FLD980727135	Ft Green Rd, Bradley 33835	Operating mine & beneficiation plant, CSAs & sandtailings, now incorporates portions of the Palmetto tract and US AgriChemicals Rockland Mine.
0400911	The Williams Company (Agrico) Saddle Creek Mine	FLD980727192	Jct SR 33 & 334, Lakeland 33801	Closed mine & beneficiation plant, CSAs & sandtailings, split into two disjunct tracts:(1) north of and adjacent to Tenoroc Fish Mgmt. Area (mine), and (2) south of US 92 east of Saddle Creek, east half of north tract has approved Development of Regional Impact from City of Lakeland for Housing & Commercial development.
0400912	Borden Tenoroc Mine	FLD980727432	Tenoroc Mine Rd, Auburndale 33823	Closed mine & beneficiation plant, CSAs & sandtailings, now state-owned and managed as Tenoroc Fish Mgmt. Area, core area of Saddle Creek Restoration & Alternative Mitigation Project.
0401065	Terminex 1	FLD981015688	3432 S Dale Mabry, Tampa 33629	Not phosphate mine (UNKNOWN)
0401203	IMC Phosphates (WR Grace) Four Corners Mine	FLD991302308	SR 37 (15 mi S of Mulberry), Mulberry 33860	Operating mine & beneficiation plant, CSAs & sandtailings, incorporates portion of former Lonesome Mine.
0400487	CYTEC — Brewster Lonesome Mine DISSOLVED	FLD000826834	E off SR 39 & N off SR 674, Ft Lonesome 33835	Duplicate - see above
0400503	Borden Feed Phosphate CM 1	FLD001704741	Coronet Rd, Plant City 33566	NonMandatory area, Status Unknown SOLD TO JAPANESE ANIMAL FEED PRODUCTION
0407260	Mulberry Phosphates	FLD004106415	4000 SR 60 E, Mulberry 33860	Owns NuGulf Wingate Creek mine & beneficiation plant north of SR 64 Manatee County - Piney Point Chemical plant & phosphogypsum stack on lower Tampa Bay- Mulberry Chemical plant & phosphogypsum stacks in Mulberry on North Prong Alafia River, currently in bankruptcy/receivership, DEP currently moving to close stacks & chem plants.
0400805	Central Phosphates 1	FLD098930076	SR 39 N, Plant City 33566	Believed to be operating chemical plant & phosphogypsum plant currently owned and operated by CF Industries, Inc.

[redacted] CF

CHEM PLANT + STACK

Radium-226 Generic Preliminary Remediation Goals [PRGs] for Recreational, Industrial, and Residential Scenarios.

These PRGs are taken from the web site: *http://risk.lsd.ornl.gov/homepage/rap_tool.shtml*, from equations developed for assessment of the Oak Ridge DOE site. The Industrial & Residential parameters are consistent with EPA defaults. The Recreational parameters do not have EPA defaults. So for the recreational PRGs, these Oak Ridge defaults were used.

External Exposure is the primary pathway due to gamma exposure in which exposure or risk is determined by a time factor in hours/day, days/year, 30 years/lifetime, with the exposure duration based on the scenario. These values are with the defaults - it is recommended that site-specific parameters would be used to run an actual risk assessment.

Note: Ra-226(+D) = Ra226 + Rn222 + Po218 + *Pb214* + *Bi214* + Po214. Pb214 & Bi214 were 2 of the other radionuclides on the contaminant list that were elevated, but they are included in the Ra226(+D) calculation, and thus the risk.

Recreational PRGs [ED= 1hr/day, 75d/y]

Radionuclide	1E-4 risk	1E-6 risk	maximum conc'n/~ risk
Ra-226 (+D)	57 pCi/g	0.57 pCi/g	47 pCi/g ~ 8.2E-5

Industrial PRGs [ED=8hr/day, 250d/y]

Radionuclide	1E-4 risk	1E-6 risk	max.conc'n/~risk
Ra-226 (+D)	2.6	0.026	47 ~ 1.8 E-3

Residential PRGs [ED=24hr/day,36]

Radionuclide	1E-4 risk	1E-6 risk	max/~risk
Ra-226 (+D)	0.51 (SSL= 1.3)	0.0051	47 ~ 9.2E-3 or 3.6E-3 (SSL)

For calculating risk from direct field measurements:

Additionally, exposure and risk from a gamma-emitting radionuclide, like Ra-226, can be calculated from the exposure rate measured with a radiation instrument in the field. The more accurate the level depends on the instrument and how it well it isolates specific gamma energies of a particular radionuclide [calibration, efficiency, type of, etc.]. So, any of these risks in the following examples would not be as accurate as a calculation from an actual concentration which isolates Ra-226 from other gammas that are natural in soil like Uranium, K-40, etc.

Example calculations: 10 urem/hr for recreational scenario:
10E-3 mrem/hr * 1hr/day * 75 days/year = 0.75 mrem/yr * 30 yr = 22.5 mrem/lifetime
2.25E-2 rem * 8.46E-4 risk/rem = 1.9E-5 risk
[range surveyed = 4 to 120 urem/hr]
so, for every 10 urem/hr for rec. scenario ~ 1.9E-5 risk of incidence of cancer.

for 10 urem/hr for ind.scenario: 10E-3*8hr/d*250d/y=20 mrem/yr * 30yr = 600 mrem
0.6rem*8.46E-4risk/rem= 5.1E-4 risk

for 10urem/hr for resid.scenario: 10E-3*24h/d*360d/y= 86.4mrem * 30yr= 2.59rem
2.59rem*8.46E-4risk/rem= 2.2E-3risk